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L16 Association of Beta-Lactam Allergy Documentation and Antibiotic Use in Patients with Febrile Neutropenia



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RATIONALE: Febrile neutropenia leads to over 100,000 hospitalizations in the US each year and can cause sepsis, septic shock, and death. Although first-line treatment for neutropenic fever is an anti-Pseudomonas beta-lactam, >10% of patients report a beta-lactam allergy. Since 90% of patients with a documented beta-lactam allergy do not have true allergy, we assessed the association of documented beta-lactam allergy to first-line febrile neutropenia antibiotic treatment.

METHODS: In this national cross-sectional study of hospitalized patients, we determined the relation of documented beta-lactam allergy (i.e. a penicillin and/or cephalosporin allergy in the electronic medical record) to first-line febrile neutropenia treatment (i.e., cefepime, anti-Pseudomonas carbapenem, or piperacillin-tazobactam), using Generalized Estimating Equations models with logit link adjusted for age, sex, race, intensive care unit location, and resistant organism colonization/infection.

RESULTS: Of 290 inpatients with febrile neutropenia receiving antibiotics at 64 US hospitals, 55 (19%) patients had a documented beta-lactam allergy. Patients with a documented beta-lactam allergy less frequently received first-line treatment (36% vs 63%), with less frequent cefepime (36% vs 63%) and piperacillin-tazobactam (9% vs 15%) but more frequent meropenem (35% vs 11%). In the fully adjusted model, patients with a documented beta-lactam allergy had reduced use of first-line febrile neutropenia treatment (adjusted Odds Ratio [aOR] 0.36, 95%CI [0.20, 0.64]).

CONCLUSIONS: In this national sample of patients with febrile neutropenia, a documented beta-lactam allergy was associated with a significant, 64%, decreased use of first-line antibiotic treatment. Improved systems for optimizing first-line beta-lactam use in patients with febrile neutropenia are needed to improve care in this high-risk patient population.

L17 Validation of the revised National Institute of Allergy and Infectious Disease / Food Allergy and Anaphylaxis Network diagnostic criteria in emergency department patients



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RATIONALE: In 2019 the World Allergy Organization (WAO) proposed a revision of the anaphylaxis diagnostic criteria proposed by National Institute of Allergy and Infectious Disease / Food Allergy and Anaphylaxis Network (NIAID/FAAN). We sought to assess the accuracy of the revised clinical criteria compared to the original diagnostic criteria.

METHODS: We conducted a cohort study of a stratified sample of patients presenting to an academic ED from January 2013 to September 2017. Patients were identified and sampled based on the presence of ICD-9 or ICD-10 codes associated with an ED visit that indicated: 1) anaphylaxis; 2) symptoms potentially secondary to anaphylaxis; or 3) an allergic reaction. The diagnostic accuracy of the NIAID/FAAN and revised NIAID/FAAN criteria were assessed by comparison to expert review by an allergist-immunologist or fellow. Test characteristics were calculated.

RESULTS: Records of 817 ED patients with an ICD code of interest were reviewed. With appropriate sample weighting this represented a cohort of 2191 patients. Median patient age was 29 years (IQR 11.2, 49.9) and 457 (56%) were women. The weighted sensitivity, specificity, positive

predictive value (PPV) and negative predictive value (NPV) of the original NIAID/FAAN criteria were 92.6%, 76.9%, 65.3%, and 95.7% respectively. The weighted sensitivity, specificity, PPV and NPV of the revised NIAID/FAAN criteria were 93.4%, 72.7%, 65.1% and 95.9% respectively.

CONCLUSIONS: The revised NIAID/FAAN clinical criteria have test characteristics very similar to the original NIAID/FAAN criteria and are therefore likely to be useful for the diagnosis of anaphylaxis in the ED.

L18 Wear a Mask! Masks Don't Affect Oxygen Saturation in Patients with Asthma



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RATIONALE: Mask use is recommended to reduce transmission of COVID-19. The effect of mask use on oxygen saturation (SpO₂) is often questioned in those with asthma.

METHODS: Adult and pediatric patients presenting to the Michigan Medicine Allergy clinic between 9/10/2020 and 10/23/2020 were asked to complete a survey pertaining to demographics, asthma diagnosis, perceived control of asthma, and mask type worn. A pulse oximetry reading was performed while wearing the mask, and respondents reported their duration of mask use prior to the measurement.

RESULTS: Two hundred thirty surveys were collected, and seven without appropriately completed SpO₂ readings were excluded. Of 223 surveys analyzed, 40% were male respondents (n=89), 46% reported having asthma (n=102), and 27% were age 19 or younger (n=60). SpO₂ ranged between 93-100% (mean 98%) amongst those with asthma (n=102), and 93-100% (mean 98%) in those without asthma (n=121). The SpO₂ mean showed no significant difference when adjusted for gender (male mean 98%, female 98%), race (African-American 98.5%, Caucasian 98%, others 98 to 99.5%), mask type used [fabric 98% (n=119), surgical 98% (n=83), N95 mask 99% (n=3)], or duration of mask use (<1 hour 98%, 1 or more hours 99%). Asthma respondents who reported their level of control (n=100) had similar mean SpO₂ in the well-controlled (n=80, 98% mean), somewhat-controlled (n=18, 98% mean), and uncontrolled groups (n=2, 96.5% mean).

CONCLUSIONS: Mask use did not decrease SpO₂ levels in patients with or without asthma, regardless of type worn. Neither duration of mask use nor perceived asthma control correlated with a decreased SpO₂ level.